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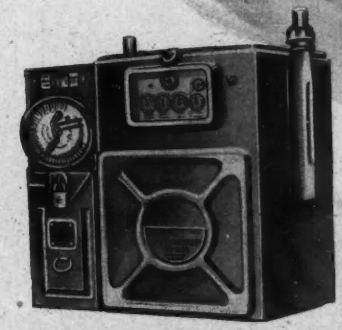

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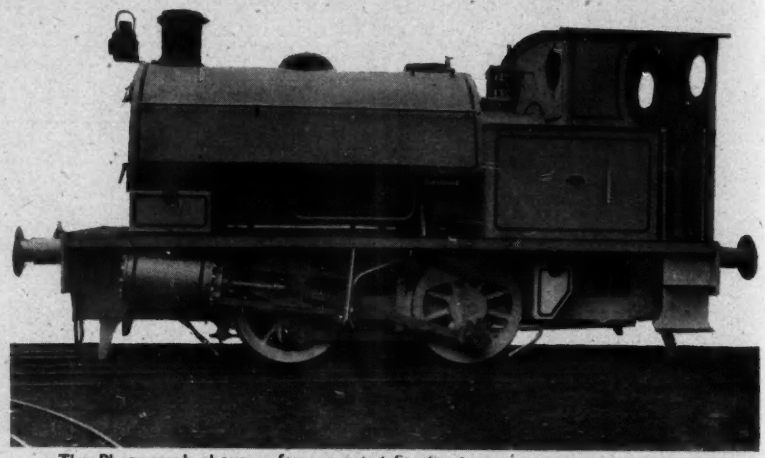

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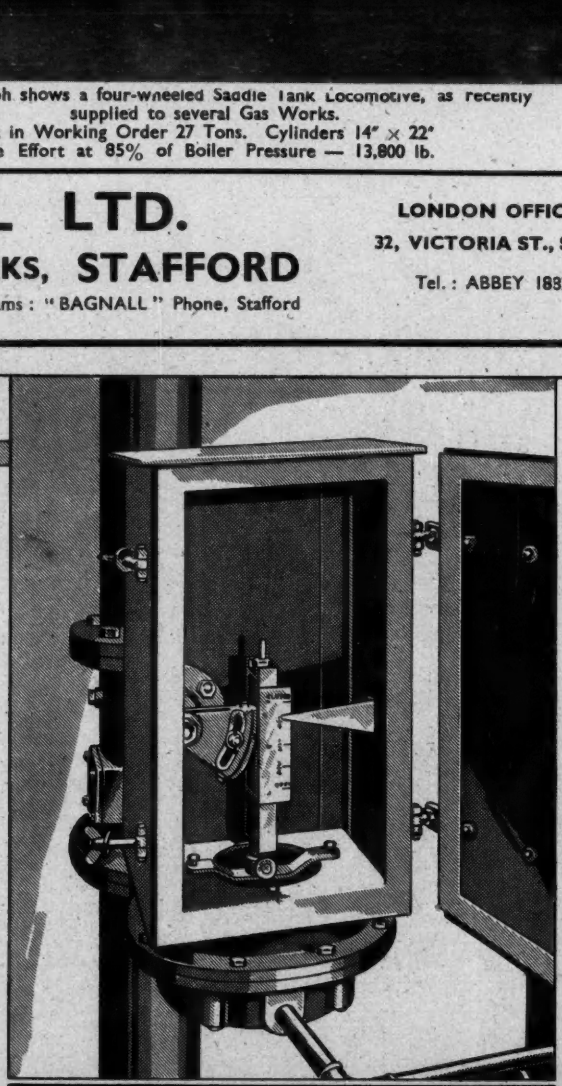

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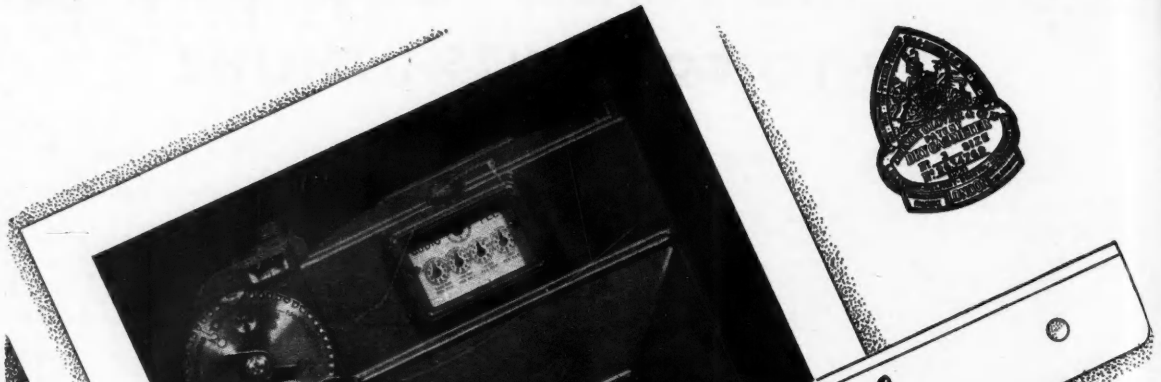

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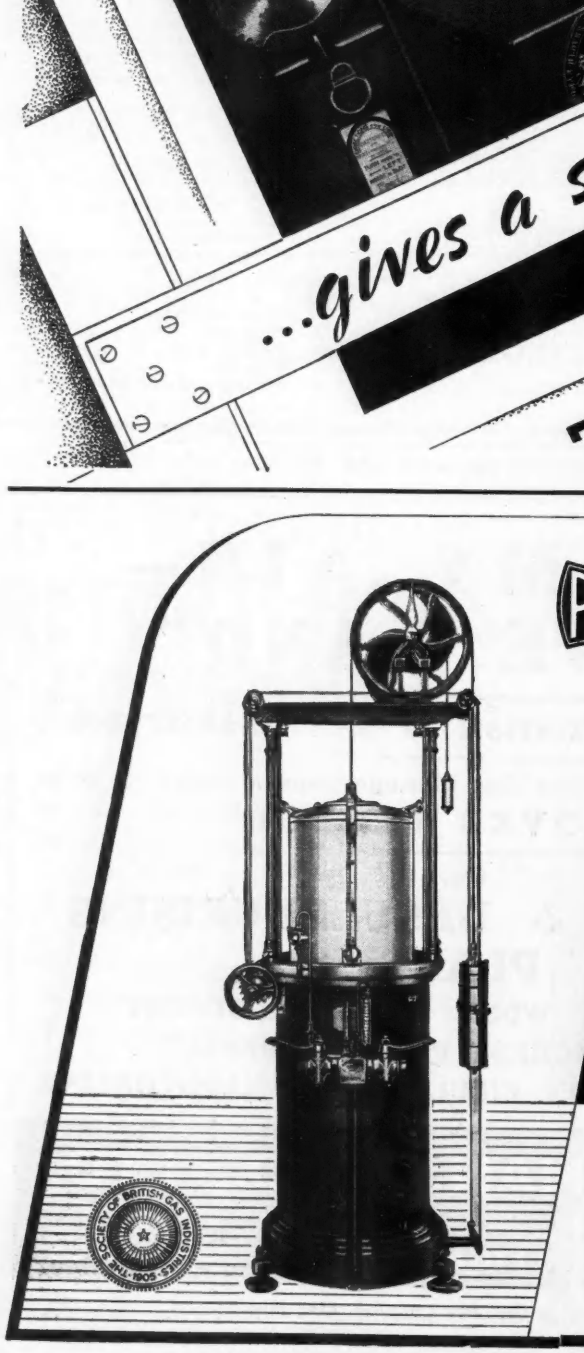

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GAS JOURNAL, JUNE 2, 1943

VOL. 241 95th YEAR No. 4176

# EDITORIAL NOTES

## GAS AND FUEL ECONOMY

ACCORDING to the House of Commons Select Committee on National Expenditure in its latest report, the outlook regarding coal production in 1943 is grave, and we should be unwise to look forward to any increase. And it is stressed that account must be taken of the fact that in the event of a European front being formed it may well be necessary to export increased quantities of coal. The need for economy is therefore imperative. The Committee issues a blunt warning. It sees no escape from the conclusion that in the absence of new conditions, such as a further release of miners from the Services or transfer from other industries, the nation must be prepared next autumn and winter to face a dangerous decline in coal production. The factors upon which reliance is at present being placed to increase output offer no sure prospect that this decline in production, consequent upon the reduction by normal wastage in the manpower available in the pits, is likely to be made good. This reduction in output is not likely to be averted unless more far-reaching measures are found and put into operation without delay. "In addition to all consumers being emphatically and regularly reminded of the need for stringent economy, continued attempts should be made to bring home to that small section of the miners guilty of avoidable absenteeism how much really depends on them, for coal is the very foundation of the total war effort." A percentage of men, particularly younger ones, are persistent absentees.

Referring to the success of the voluntary fuel economy campaign, the Committee insists that this must be continued without a break, and expresses the opinion that further economies can be achieved by some industrial users. There can be little doubt about this. As we mentioned in connexion with the recent conference of the Fuel Efficiency Committee of the Ministry of Fuel and Power, the efforts of the Regions into which the country was divided for the fuel economy scheme when the plan was organized have resulted in a rate of saving approximating to 1,000,000 tons of coal a year. That is the result of work since the autumn of last year, and during this time the Regions have been able to inspect only about 17% of all industrial works in the country. The scope for increased saving is apparent. Regarding domestic consumption, the Committee, emphasizing that as little raw coal as possible should be used, makes this very important recommendation, which we set out in italics: "*When there is a choice, gas should be used in preference to electricity, because its by-products are needed to make munitions.*" This recommendation from an authoritative source, from an impartial body which has sifted a mass of relevant evidence, is obviously of the utmost significance. It is the first recommendation of the kind we have seen, and it implies recognition of the essential economy and the vital nature of the Gas Industry's process. It is, from the national point of view, altogether a happy sign. The recommendation is made during a time of stress, when we are at war. But the very by-products essential to the making of munitions and the prosecution of war are also essential to the country in time of peace, and will be of greater importance after the war than ever before. We hope that due note will be taken of this recommendation.

## MANAGEMENT AND SALARIES

IN the "JOURNAL" last week we referred to the plight of certain small undertakings before they were taken over by the British Gas Light Company, Ltd.—a story sketched by Mr. L. C. B. Williams in his Presidential Address to the Eastern Counties Association. The day following publication of that Address we were in Cardiff listening to another Presidential Address, this time by Mr. A. E. Pask, to the Wales and Monmouthshire Association at the annual meeting. This again was a story, told in brief, of how a small undertaking suffering from the effects of the last war was brought by good management into a sound position. The undertaking concerned in this case was the Caldicot and District Gas Light and Coke Company, Ltd., which passed to the control of the Severn Valley Gas Corporation, Ltd., in good condition in 1938. And again we had a picture of an undertaking (in 1923, when Mr. Pask was appointed Manager and Secretary) short of storage facilities and having an inadequate distribution system. It was an interesting if not a spectacular story of how the undertaking was set firmly on its feet, with, by 1937, a creditable consumption per consumer figure of 100 therms per annum and a satisfactory financial state and outlook. It was a modest enough account of the outcome of faith in properly implemented gas service irrespective of the size of the community in the area of supply. It is not surprising that to-day Mr. Pask's confidence in the Gas Industry is stronger than ever. The possibilities, he said last Thursday, are boundless—but !

His proviso—and we regard it of first importance—is that we must attract to the Industry young men of ability and enthusiasm. To which there is the obvious corollary that we must be prepared to pay adequately for their services at rates corresponding with those which other industries are prepared to offer. Not only must those in executive positions be properly recompensed; assistants and technicians must be assured of adequate salaries. Youth of to-morrow will not be attracted to the Industry if all they can reasonably see before them are hurdles of low salaried positions. However, as the President of The Institution of Gas Engineers, Mr. E. V. Evans, pointed out to the meeting, a solution to the problem is being actively sought; its importance is, in fact, fully appreciated. And we ourselves have good reason for belief that headway is being made on the issues of the salaries of engineers and managers and their assistants in a practical way. The validity of a national scale—a scale covering both company and municipally-owned undertakings—is being recognized, and we have hopes of an agreement whereby an accepted minimum scale will not be regarded as a maximum scale. An agreement designed to foster incentive, not to regiment income on a professional basis. We think there will be better recognition of the status of the gas engineer and manager and his more immediate staff, and we know that a large amount of work has been and is being put in to bring about this recognition—a recognition absolutely vital to the future of the Gas Industry. And it seems to us that the matter is one of national importance as well as of obvious moment to the personnel of the Gas Industry itself.

## THE S.B.G.I. AT WAR

LAST week we published the Society of British Gas Industries' Council report for 1942–43. It is a document so clearly explanatory of the situation—indeed of a number of situations—and itself so rich in comment that it leaves us little to say on any of the subject-matter with which it deals. Even if the next four years are destined to be the toughest part of the war, the Society cannot be accused of undue optimism in reverting to normal working, because after all, whenever it may come, the end of the war is almost four years nearer than when the "cabinet rule" of the Emergency Committee was substituted for rule by full Council. How well it has repaid the Society thus to obviate cumbersomeness of procedure is quite clear from the account of achievement in the stressful years, through the period of

adjustment to conditions—though never static ones—of all-out war effort. The members can indeed be thankful that they were able to agree so readily upon the personnel of their Emergency Committee, and that they were able to find such capable men who were willing to serve. And the Emergency Committee would be the first to attribute a great part of their success to the untiring vigilance of the co-ordinating authority at headquarters where, they tell us, Mr. M. W. Burt as Manager, counsellor, ambassador, and in many other capacities has retained a firm grasp of realities through a diversity of changing circumstances.

The report of the Society's work through the years of war should, for several reasons, prove a source of solid encouragement to the whole Industry. The exceedingly capable manner in which they have handled the supply question, indeed, the way in which Government departments have leaned upon them in respect of certain specialized problems, can hardly have failed to gain prestige for the Industry of which the members form a part; and in these days prestige based upon solid achievement is not too easy to come by. Moreover, it may well prove its usefulness when the time comes to assess the values of the various fuel industries in the schemes of the future. That the Society stands ready, as ever, to join with the rest of the Industry in solving common problems is clear from the references to post-war planning, research, and other leading topics of the day. Members of the Society, from the very nature of things, are able to view matters from an angle which may not be visible either to the administrators or the engineers engaged purely in gas production. Moreover, by virtue of their contacts with all sorts and conditions of gas undertakings and their personnel, they have exceptional opportunities of tapping a wide cross-section of opinion upon which to base a sound judgment of their own. Encouraging though it is to read that "the Society's relationships with its kindred organizations in the Gas Industry have become, if anything, closer during the war period," we believe it will be increasingly to the advantage of the whole Industry for the two "sides" to co-operate to the highest possible degree. Indeed, from the apparent shape of things to come, the contracting side would seem to hold the key to many of the problems which will beset the Industry, and they will inevitably play a leading part in their solution. We know that the benefit of their experience both in the technical and the production spheres, in times of peace and of war, will be freely offered.

## QUESTIONS—AND ANSWER

ON many occasions recently the question has been raised—and many friends have asked us the question—"What is the Gas Industry doing during the war, and in spite of war-time difficulties of known and formidable nature, to prepare for the development of the domestic load in changed circumstances on the cessation of hostilities? Will it be prepared for fitting in with new ideas about housing, new conceptions of the needs of the housewife, new thoughts on domestic fuel requirements? To what extent is it, at the present time, designing new types of appliances or further improving known types and testing these out in the laboratory and maybe on the district, to be ready with the assurance of production when peace comes and when an enormous demand for new housing in a new era will have to be met without time lag? Will the Industry really be ready? Is it in fact now in as close touch as it might be with housing authorities and architects and builders? Will it have something novel, attractive, convincing to offer at once—not just blueprint stuff, but the actual "goods"? And, in spite of its numerous present problems and troubles, could it do more? In brief, is it alive to the possibilities, and is it preparing for them adequately, leaving no channels uninvestigated?

As a matter of fact, during the past year we have written quite a deal on the subject from angles both general and particular, and we hope we have given an impression of confidence. Certainly we have found no cause for gloom concerning either the general or the particular aspect—either the Industry's contact with Government departments concerned in planning for the post-war period or the activities within the Industry in the development of appliances, naturally development within limitations which are in no sense self-imposed. Perhaps we could do more in some directions. There is much room for closer contact with local housing authorities—contact between local gas undertakings themselves and the architects and the planning authorities in their own areas. That is an example. Turning to the particular, we have had the opportunity several times lately of inspecting development work on gas and coke consuming appliances. We have been able to hint at some of these developments though we have been unable, for wholly understandable reasons, to detail them. And this brings us to a visit we paid to the works and laboratories of Radiation Ltd., through whose courtesy we had the opportunity of "seeing for ourselves" with the curtain withdrawn to disclose many fascinating and, we think, important developments and improvements which once again—and again for wholly understandable reasons—we are unfortunately unable to detail. The point is, however, that what we saw and what was explained to us with a frankness which we acknowledge here were to us a source of confidence that the Gas Industry will not be unprepared when peace comes—whether that be near at hand or afar. They gave us certain keys to the questions such as we set out at the beginning of this note.

We are, however, at liberty to describe one feature—a feature concerned with contact between the Industry and housing authorities; a feature of immediate application in this regard, and an answer in part at least to the questions which are being put to us. This is a full-scale skeleton of a suggested working-class dwelling of the future, and a brief description will be found on p. 673. Here we would emphasize two points about this venture, which is a real attempt to give the architect something to ponder over. Our first point is that it is a gas-cum-coke house to be in keeping with the pockets of the low income group while affording an ample—one might almost say luxurious—heating and water-heating service combined with the most modern gas cooking, refrigeration, and laundry equipment, and a host of other labour-saving features of a general nature. The second is that, by taking this step Radiation have provided a practical demonstration of what actually can be accomplished by the gas-cum-coke combination and of the lively interest which the Gas Industry is showing in post-war housing. It is a demonstration to which architects and housing authorities can be taken to "see for themselves," just as we were able to see for ourselves. Not all architects may agree upon every detail; not every housewife may find every detail in planning overwhelmingly attractive. But here we have a concrete example instead of a theoretical blueprint—a solid attempt to solve a main post-war problem. To our mind it is a venture on which Radiation are to be congratulated, and by which the Gas Industry and individual gas undertakings should profit; and we think that it would be all to the good if gas undertakings "saw for themselves."

There is another point we must mention. The particular demonstration house described is not to be regarded as Radiation's "be and end all" effort in this direction. Far from it. They have in hand alternative designs, including flats; and these will be placed on demonstration. What an excellent opportunity for the Gas Industry to link up with the effort.

We wish we could write about the improvements in apparatus we saw in the Radiation Laboratories. It is another story; a good story; but not a story for just now. It is a story we shall have up our sleeve for publication post-war. All we can say at the moment is that it is a story which ought to make anyone who is despondent about the progress of development of gas and coke burning appliances for domestic use take fresh heart and new cheer.

**The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.**

# Personal

Mr. SYDNEY E. KNOWLES, General Manager and Secretary of the Eastbourne Gas Company, has been elected a Director.

# Obituary

The death occurred on May 13 of Mr. JOSEPH MCNICHOLL, M.I. Chem.E., Engineer and Manager to the Cork Consumers' Gas Company. Mr. McNicholl was a native of Sunderland, and served in gas-works in the North of England before taking up the appointment in Cork during 1919. He was President of the Irish Association of Gas Engineers and Managers during 1926–27. Deceased was highly esteemed among his colleagues in the Gas Industry, and his loss is keenly felt by his friends.

# Letters to the Editor

## Mechanical Cooking

DEAR SIR,—The reference in the "GAS JOURNAL" challenging accepted thought on cooker design, particularly thermostatic control, encourages me to give expression to a point of view held by my late father, Dr. B. Friedman, who it may not be generally known not only introduced the gas cooker to Russia many years ago, but also had wide personal experience of cooking. The subject was recalled to my mind by Mr. Arthur Forshaw's letter on standardization of cooker thermostats published in the "JOURNAL" of May 6, 1942, where it was stated that "the object of fitting a stat is to ensure that cooking conditions shall be reproducible. It should be realized that there is, in effect, no temperature at which any particular food is cooked; it is a matter of rate of heat input. Some foods require a rate within fairly narrow limits, otherwise they do not show the characteristics for which they are valued. They must therefore be cooked in small quantities and with nothing else in the oven. With others there is very great latitude in a filled oven."

I have given some thought to the use of oven temperature control devices, and, as a result of practical experience over a number of years, I should like to make the following observations, which I think are relevant to good cooking. It seems to me that the weight and density of the food to be cooked, the exposed surface area, the fat and water content and the importance and distribution of muscle, sinew, and bone in the case of meat must have an immediate bearing on the heat input required if the cooking is to be satisfactory. It does not follow that two joints of meat of identical weight can be satisfactorily cooked in similar oven temperature conditions. For instance, fresh home-killed meat and imported meat require different temperatures if they are to be cooked equally well. Of course, to those who do not discriminate in the cooked product, this may not be considered of much importance, but to those to whom cooking is an art, the process requires intelligent supervision, which automatic devices do not provide.

Cooking by the thermostat alone cannot, in my experience, equal the supervision of an intelligent interested cook. Mr. Forshaw pointed out that constant temperatures, which may be established eventually at various "stat" marks in an empty oven, bear no known relationship to the temperature attained by the foodstuffs cooked at those marks. The competent and intelligent cook must know the conditions of the oven, and have the means in his or her control to see to it that these essential conditions exist during the cooking operation. To leave the cooking process entirely to the thermostat without taking into account the variants to which I have referred may easily result in indifferent cooking.

Using a thermostat encourages the cook to choose the setting which will bring the oven up to temperature and will provide a sufficiently rapid heat input adequately to cook the food, provided duration of cooking is closely controlled. The alternative method of oven temperature control with a graduated tap helps to encourage a more correct procedure, which allows far greater latitude in the time taken to bring the food to the perfectly cooked stage. If the temperature of the oven is first raised to a high level for short duration and the heat input to the oven then reduced, and the cooking continued at a lower temperature and consequently reduced heat input, the interval of time between stages of cooking which may be described as "just cooked" and the first stage of overcooking will be considerably greater than under constant heat input conditions.

Mechanical cooking, if it may be so described, evades the true art of cooking. It seems to me that a properly constructed simple graduated gas tap, giving a sufficient range of gas rates, probably is all that is required to enable an intelligent and interested cook to produce satisfactory results. I fully expect this view will be challenged by the protagonists of mechanical cooking, but I venture to suggest that for all practical purposes the simpler method, if properly applied, is all that is really necessary for a class of gas cooker which will be used by a very large number of people in post-war days.

These views are not only based on my own personal practical experience, but also on most careful scientific investigation and thought.

*Ascot Works,*
*Neasden, N.W.* 10.
*May* 25, 1943.

Yours faithfully,
LEOPOLD FRIEDMAN.

## The Future of a Junior?

DEAR SIR,—The present state of the Gas Industry and the imminent reorganization and re-arrangement are matters which give the Junior, particularly on the distribution side, considerable concern. Complete plans are being made for the future of the Industry, but it would appear that these are concerned solely with production. This may be wrong, but it is frankly very difficult to appreciate what facilities will exist for the future utilization of gas. After all, unless the public is convinced and persuaded to use gas, then the need for manufacture and production will not arise. It would almost seem that while the Gas Industry is concentrating on production, competitors are more concerned with application and utilization. It is hoped that this state of affairs is wrong, but frankly it is extremely difficult for a distribution Junior to see any future at all. The distribution side has always taken second place to production. This may be right in the Gas Industry, but in almost every other business the sales and service sides come first, as obviously without these production is not necessary.

This condition is, however, evidenced by the attitude towards the supply side of the Education Scheme. The Education Reports have always shown a lack of supply students. Why is this? The Juniors have been told to equip themselves and qualify, and then they would be adequately paid. It seems obvious that the better way to approach this would be to offer a reasonable salary to the distribution men who were qualified; then the students would come forward. How many Diplomas have been granted in Gas Supply since the inception of the scheme, and of these diplomees how many are earning more than £500 per annum to-day? The Education Scheme as set out demands a high and complete education, and does justify much better consideration than is often given. On many occasions the fact that an applicant for a position has qualified under the Institution Education Scheme means nothing. The interviewing Committee or Board does not seem to realize what the Institution educational qualifications really mean. This seems to be an aspect which ought to have serious consideration now.

Another perplexity of the Junior is the conditions of Corporate Membership of the Institution. Here, again, for long enough the Supply Diploma did not qualify for full membership. To-day Associate Membership is granted on reasonable conditions, provided Membership of the Institution was not so easily granted to non-qualified persons purely by virtue of their position. In the case of the Mechanical, Civil, and Electrical Institutions of Engineers, it is easier to enter the Kingdom of Heaven than obtain membership without the requisite qualifications. Is it fair to the well-qualified Junior, in the case of the Gas Industry, to allow these conditions to prevail?

Frankly the future for the Junior, who has been a considerable time in training himself, is by no means rosy. At the same time it is fully realized in any post-war schemes there must be a tremendous field for gas, a field in which the present Junior would hope to take a very active part—but will he? In so many cases the Juniors are wondering if their choice is right; if they would not be better to seek another line. The Seniors maintain, and anyone with an elementary appreciation of the fuel position of this country realizes, that gaseous fuel has a future. The Juniors wonder what is being done about it.

The President of the Institution has clearly indicated that development will form an important function of the new gas organization. This is very encouraging, but what is being done towards this development? Who are to effect it? What encouragement or inducement will there be for the Junior to prepare for this? The recent proposal of the Junior Associations to affiliate with The Institution of Gas Engineers may be the solution. Surely the Juniors are entitled to a preview of the scheme. It certainly seems vitally necessary.

*May* 21, 1943. "SCOTIA."

## Club for Irishmen in the Services

DEAR SIR,—Could you give a few lines of your restricted space to bring an excellent cause to the attention—and goodwill—of your readers? It is hoped that 100 Irishmen in England will present £100 each to the Shamrock Club, London, W. 1—but I think others may like to contribute something. Broadly speaking the Club is intended to supply a great want for Irish serving men returning from different theatres of war, for those who wish to visit London, and for those going on leave to Ireland—a Club where they can pass the time between arrival and departure, change into plain clothes and store their kit, and it should be a meeting-place for all. Lord Croft, Under-Secretary for War, recently announced that three Irish regiments, in addition to the Irish Guards, had taken part in the victorious Tunisian campaign.

The Club has a gas-equipped kitchen and hot baths are provided by a water heater kindly presented by Ascot Gas Water Heaters, Ltd.

I should be pleased to send further particulars to enquirers. Arrangements can also be made for contributors to visit the Club at 28, Hertford Street, Park Lane, W. 1.

1, *Grosvenor Place, S.W.* 1.
*May* 28, 1943.

Yours faithfully,
EILEEN MURPHY,
Member of the Club Committee.

# The Wales Association

The 38th Annual Meeting of the Wales and Monmouthshire Association of Gas Engineers and Managers was held on Thursday last in Cardiff, the chair being taken by Mr. A. E. Pask, the President, who extended a hearty welcome to the many members present, and said how pleased and gratified all were to have with them the President of The Institution of Gas Engineers, Mr. E. V. Evans.

The minutes of the previous meeting were taken as read and were confirmed, and the election of new members—A. H. Sayers, W. R. Taylor, A. E. Pickard, A. H. Danniels—was agreed unanimously. Which brought us to the Report of the Council and the Statement of Accounts, submitted by Mr. E. M. Edwards (Port Talbot), the Secretary, who remarked that membership, at 163, showed an increase of 4. The report was adopted on the proposal of Mr. B. Grainger (Merthyr Vale), seconded by Mr. F. Boardman (Cardiff), and the Statement of Accounts on the proposition of Mr. I. G. Jenkins seconded by Mr. W. F. Edwards (Bridgend).

Mr. J. H. Canning, O.B.E., recounted the arrangements made about the Octavius Thomas Memorial Fund (see "JOURNAL" of June 3, 1942, p. 363), remarking that, while the Fund was accumulating, no steps had been taken about it. Mr. Pask explained that a year ago it had been agreed that a Sub-Committee should deal with the matter. In point of fact, this Sub-Committee had not met as yet. Part of the sum subscribed was, he would remind them, to be devoted to the provision of a prize for the most deserving student of the year, the remainder being handed over as a Trustee Fund to the Benevolent Fund of the Institution. Mr. W. Clark Jackson (Neath) suggested that something should be done to implement the idea of encouraging young students by putting the original proposal into action right away, despite Hitler; and there was a unanimous murmur of assent. Adoption of Mr. Canning's statement was proposed by Mr. A. E. Pickard (Llanelly), seconded by Mr. B. J. Bell (Cardiff), carried *nem. con.*

The Assistant Secretary (Mr. D. W. Rees, M.B.E., Pembroke) was then called upon to comment on the H. D. Madden Memorial Fund (for objects, see also p. 363, "JOURNAL" of June 3, 1942). Mr. Rees stated without ado that the sum so far subscribed was inadequate; he appealed for further support.

Then came election of Officers for the ensuing year:
*President.*—D. Muir (Pontypridd).
*Senior Vice-President.*—W. T. Kenshole (Merthyr Tydfil).
*Junior Vice-President.*—E. M. Edwards (Port Talbot).
*Council.*—J. Powdrill (Pontypool); K. E. Tiddy (Carmarthen).
*Treasurer.*—J. H. Canning, O.B.E. (Newport).
*Secretary.*—E. M. Edwards (Port Talbot).
*Asst. Secretary.*—D. W. Rees, M.B.E. (Pembroke).
*Auditors.*—J. H. Jones (Dowlais); W. F. Edwards (Bridgend).

On the proposition of Mr. D. W. Rees it was agreed that a subscription of 15 guineas should be made to the Benevolent Fund of the Institution; Mr. T. Wilkinson (Abercarn) seconded.

The next item on the agenda was the election of Mr. J. H. Canning and Mr. W. H. Johns (Swansea) to Honorary Membership of the Association. The proposal was in the hands of Mr. D. W. Davies (Tredegar), and it was seconded by Mr. W. Clark Jackson. Both proposer and seconder were felicitous in their references to both Mr. Canning and Mr. Johns, and the motion was carried with great enthusiasm. Mr. Canning replied quietly and effectively, saying that he would endeavour to further the interests of the Association.

A report was then made by Mr. E. M. Edwards on the Paper by Mr. J. Powdrill on "Wartime Miscellany" ("JOURNAL," Sept. 23, 1942). Mr. Edwards explained that the Council of the Association had given careful consideration to the Paper, and had come to the conclusion that while uniform terms and prices for appliances were desirable in principle, it was inadvisable at the present stage to restrict the practices of individual undertakings; that while uniformity of tariffs was desirable, little progress could be made unless there was greater regional unification; and that in regard to standardization of calorific value and of appliance design the same comments applied. The report was adopted on the proposition of Mr. H. Maycock (Abertillery), seconded by Mr. W. T. Kenshole.

At this stage the President gave his Address, an abstract of which appears on p. 677. Thanks for the Address were proposed by Mr. J. F. Rust (Newport), seconded by Mr. D. Muir. Mr. E. V. Evans, who spoke in support, remarked that it was no mean achievement on the part of Mr. Pask that he had raised the consumption per consumer in Caldicot to the figure of 100 therms per annum.

The meeting then adjourned for lunch at the Park Hotel, which was attended by the Lord Mayor of Cardiff (Alderman James Griffiths). Mr. E. V. Evans proposed the toast of "The City of Cardiff," to which Alderman Griffiths replied. The only other toast was that of the "Wales and Monmouthshire Association of Gas Engineers and Managers," proposed by Major I. David, and responded to by Mr. Pask.

At the afternoon session the members had an Address by Mr. E. V. Evans (see p. 674), a vote of thanks to whom was proposed by Mr. G. M. Gill (Severn Valley Gas Corporation, Ltd.), and seconded by Mr. J. H. Canning.

# Statistics in the Fuel and Power Industries

**Discussion on the Paper by Mr. O. W. Roskill to the Institute of Fuel—see last week's "JOURNAL."**

Mr. **J. F. Ronca** agreed with Mr. Roskill that it would be well, in asking the consumer for information, to let him know why it was wanted. It was not always possible to tell him, but when it was possible it went a long way towards removing suspicion, and it enabled those who were gathering the information to make use of other facts that were not quite what they had asked for. In collecting statistics he suggested that those responsible should take pains to explain precisely what they meant by the terms they used. That was an extraordinarily difficult thing to do. The Paper referred to coal and coke and by-products as though coal were a fundamental material that did not vary at all, and they were doing the same thing about oil. So far as oil was concerned perhaps the differences did not matter, but in some cases it was essential that much more precise information should be given. He had been concerned with returns relating to ammonium sulphate from gas-works, and it was extraordinarily difficult to get any information at all. The people who were making solid ammonium sulphate could tell them what they were making, but it they happened to be making the liquor only, then heaven alone knew how much was being produced. It seemed almost impossible to get descriptions and definitions down to terms that everybody night understand.

Statistics had been quoted in the Paper regarding the consumption of coal, headed by figures for coke ovens and gas-works, and he felt more care should be taken in defining what was meant by consumption. Both in the coke ovens and gas-works, where the totals were not very different, the fuel concerned was "treated" rather than "consumed." In both industries they were processing the fuel, and not consuming it.

Dr. **C. H. Noton** said he must join issue on the suggestion that there should be a central statistical body of the fuel industries, which must not be a Government body, and should be independent of the fuel industries themselves. If he had read the Paper aright he could not see how that would work, because such a body would have to be a philanthropic institution. Money must be found for running a statistical body, and it seemed to him that the proper place for it was in the Institute of Fuel. That might not be possible at present, but when the Institute secured its Charter it should be in a position to work with some authority, and to call on the whole of the fuel industries in order to support, within the industries, the necessary staff for collecting the statistics, and it should also have the authority to send out forms with some degree of compulsion. He had been out of the Gas Industry for some time, but if he was able to return to the Coke Association after the war it was his intention to start collecting all the information he possibly could about the manufacture and use of coke. The Gas Research Board had made it evident that it was going to study the compilation of information in the Gas Industry, and he could foresee a very complete statistical survey. The people who were concerned with the post-war planning of the Gas Industry must also be getting out statistics. The matter should be studied also from the international point of view. The Mining Association in this country, and its counterpart in Germany, had already made a good start in the compilation of international statistics. There were differences in practices which it would be desirable to eliminate, and there were prospects after the war of international control of fuels. Statistics would have to be collected and some pressure must be brought to bear in order to make for permanent statistical accuracy. Divergencies of presentation should be ironed out. To give only one example, he mentioned the figures for the production of coke in various countries. In some countries, Germany for instance, they included breeze, although they did not always say so; in Belgium they left out the breeze, and in this country they put it in—and said so! Statistics of any kind would be useless unless production was related to consumption. Production figures could be of no more than mere historic value unless it was known how the fuel was consumed.

Mr. **Ronca,** speaking of compulsory powers in collecting statistics, said it must be remembered that even Government Departments who asked for statistics had first to get compulsory powers from Parliament.

Other points in the discussion, in which Mr. **J. G. Bennett** (Chairman), Mr. **H. J. Scott**, Mr. **G. Vivian Davies**, Mr. **H. R. H. Ward**, Mr. **J. Sterling**, Mr. **R. Y. Sanders**, and Mr. **J. D. Troup** took part, were that an attempt should be made to prepare statistics on a regional as well as a national basis, with some alignment of the varying boundaries of existing regions; that users should buy fuel on a calorific value basis; that exaggerated ideas of the need for trade secrecy were a hindrance to voluntary information, and that future statistics should draw proper distinctions between fuel used for power purposes and that used for processing. Mr. Bennett said it was his intention to advocate the issue of a Fuel Efficiency Bulletin on the keeping of statistics to assist industries to attain uniformity.

Mr. **Roskill,** replying to the discussion, said he did not think it would be necessary in the future to go to Parliament whenever they

wished to compel people to provide information. A very great deal could be done through trade associations, which were in a much more powerful position than they used to be, and the extent of their control was going to increase. It was important, however, that there should be an independent statistical authority, which would attain a high standard of reliability and would be trusted by the various industries concerned. He agreed with Dr. Noton that the Institute of Fuel might well constitute such an authority.

## Women's Gas Council

When the Women's Gas Council set out in the peaceful summer of 1935 in quest of better homes, the most sanguine of its founders could not have foreseen the range of its activities in the fourth year of the war nor have even thought of the visions that now lie ahead. The early days of the war brought interruptions in what were then its normal activities, and it took some little time to adapt the Council and its local branches not only to wartime conditions, but to a consciousness of the need for looking forward to what will happen when the war is over. Ever since the change-over, however, the Council has applied itself with great energy to the attainment of its highest objectives, and it was inspiring to hear at the Eighth Annual Meeting at Gas Industry House on Empire Day, attended by representatives from all parts of the country, of the way in which it had extended its work, and made fresh contacts with other seekers after the improvement of social conditions during the past year.

The highlights of the meeting were the annual report submitted by Mrs. G. Abbott, a short speech by Lt.-Colonel F. J. Bywater, M.C., in seconding its adoption, and an address by Miss Irene Ward, C.B.E., M.P. As Chairman of the Woman Power Committee, which consists of all the back bench women M.P.'s and women representing trade unions and other movements, Miss Ward congratulated the Women's Gas Council on its fine record of work, and pleaded for sustained interest in public affairs, and a determination to spare future generations from the horrors the world had had to face during the years of war. The annual report, which space will only permit us to summarize, showed that post-war housing problems had predominated. Recommendations had been submitted to the Design of Dwellings Sub-Committee of the Ministry of Health's Central Housing Advisory Committee ; the evidence was confined to heating, washing, and cooking, but some basic rules for kitchen planning were included, as well as two fully annotated kitchen plans. Similar evidence had been submitted to the Design of Houses Sub-Committee of the Scottish Housing Advisory Committee after the Secretary had visited Scotland and collected information from experts and from housewives of all types and income groups. A year ago the Council had a stand, admirably designed by the B.C.G.A. studio staff, in co-operation with the Housing Centre at a women's conference and exhibition on housing and planning at the R.I.B.A., where bombed-out Poplar housewives discussed their views on kitchens with visitors. The Secretary, who is a member of the Executive Committee of the Women's Advisory Housing Council, has been elected to two sub-committees, one making a survey of the needs and hopes of younger women in post-war housing, and the other a recommendations sub-committee, which is responsible for preparing evidence for direct presentation to the Design of Dwellings Sub-Committee. The W.G.C. is now represented on the Women's Group on Public Welfare, whose recently issued publication, *Our Towns*, has received much publicity.

In collaboration with the B.C.G.A., a booklet dealing with the care and maintenance of gas appliances, for inclusion in the Handywoman's Course for the Girls' Training Corps, was drawn up, and it proved so popular that another edition will be needed. The Council also rightly claims a share in the success of the campaign to secure equal war injury compensation for women. Branch members up and down the country had previously signed a petition, and the Council was represented on the deputation which was received by Mr. Attlee. The Council is represented on the housing, household service, and education committees of the National Council for Women, and the Secretary has been invited to attend several meetings of the British Coal Utilization Research Association's Women's Advisory Committee. Useful contacts have been maintained with the British Federation of Business and Professional Women, and the Council is also represented on the committees of the Institutional Management Association, the W.V.S. Advisory Council, Town and Country Planning Association, Ministry of Labour Conference of Women's Organizations, and National Housing and Town Planning Council. Despite the fact that many members are in the Forces or industry, meetings have been well attended and valuable work in the national cause has been continued, including savings groups, canteens knitting comforts for the services, and needlework for local hospitals. Special satisfaction is expressed at the recent affiliation of the Halifax Gas Development Association, which was the forerunner of the W.G.C. *Fanfare*, the official magazine, is as large in size and circulation as the paper situation permits ; the monthly "I Pass This On To You" leaflets are in great demand; and the mobile canteen presented by the Council to the Y.M.C.A. in 1940 is in constant use in the Manchester district.

Paying tribute to the vitality of the work throughout the country, Lt.-Colonel Bywater championed the cause of the housewife, who has not hitherto been persistent enough in telling the menfolk what she wants in the way of gas supply. It is good to note that some voices have been raised in favour of taking women more extensively into the counsels of the Gas Industry, which is willing to do all it can to ease the burden of the women in the home. Colonel Bywater hopes to see women relieved of the "drudgery, dust, and ashes" that are the curse of her life, and children taught more of the dignity and happiness of home life so that they are not driven to the cinema as an escape from boredom.

## A Dwelling of the Future?

In an Editorial Note on an earlier page of to-day's issue we refer in general terms to a full scale skeleton house which Radiation Ltd. have erected as a suggested working-class dwelling of the future, equipped, from the housewife's point of view, in every particular. This dwelling incorporates many ideas, some of which may or may not appeal to individual taste, but it does provide in tangible form the embodiment of a real attempt to give the architect something to ponder over and the housewife something to take pleasure in. At the same time it presents something which the Gas Industry and individual gas undertakings ought to consider very seriously. The construction steps away from the path of tradition, and it seemed to us that the house is built round the kitchen as the functional workshop of the housewife. Planned for labour saving and convenience, the kitchen is in effect divided into two sections—a normal working section and a laundry section. The working section, distinct and separated from the laundry section, is complete with gas refrigerator and cooker and sink and convenient unit-contruction cupboards; the laundry side has its gas washing machine, its sink, and its clothes-drying cupboard. To those conversant with the work of the housewife the idea of a separate laundry within the home will be appreciated. Now the laundry and the kitchen proper are divided by a central common flue space which accommodates every flue, drainpipe, and service pipe of the dwelling. And this is one of the outstanding arrangements of the house. The kitchen proper leads into a dining recess which can be separated at will from a living room of ample dimensions. Hoods over the gas-consuming appliances lead to the common flue space.

We come to the basic idea of the heating arrangements. The house is insulated; we have, as we have mentioned, a central common flue space. The living room is fitted with a slow combustion coke stove flued into the central space. This stove, which is a combined heating and water-heating stove, provides the warmth and the hot water for the house. It is the only appliance which needs any attention, and the amount of work involved is at an absolute minimum. Of course, the home is smokeless. Radiators from the water circuit provide background central heating. Gas fires are fitted for use when needed, in the bedrooms and connected to the water circuit is a gas circulator for use when needed—in the summer or for "topping up." There are variants to the theme. For instance, a gas fire may be fitted in the living room and a coke boiler in the kitchen. But the basic principle is the same. The house is essentially a gas-cum-coke house, and the major heating and hot water load is taken by coke—by the one coke appliance. And there is only one central flue. We would also stress again that the house is insulated, which cuts down heat requirements enormously.

Radiation, we understand, are keeping "open house" in this new dwelling, and we recommend those who can to pay a visit and take their city architect with them. For the larger gas undertaking which may have the space available, the cost of staging a similar exhibit, compared with the potential value of such a demonstration, is trifling.

## Diary

June 8.—National Federation of Gas Coke Associations, General Committee, Gas Industry House, 9.30 a.m.

June 8.—National Gas Council; C.E.B. Meeting, Gas Industry House, 11.30 a.m.; Annual General Meeting, Grosvenor House, Park Lane, W. 1, 2.15 p.m.

June 8.—Federation of Gas Employers; Annual General Meeting, Grosvenor House, Park Lane, W, 1, 3.15 p.m.

June 9.—Institution of Gas Engineers, Annual General Meeting, Institution of Civil Engineers, London.

June 9.—National Benzole Association—Annual General Meeting, Wellington House, Buckingham Gate, S.W. 1, 3 p.m.

June 21.—London and Counties Coke Association, Gas Industry House.—Finance Committee, 11 a.m.; Executive Committee, 11.30 a.m.; Central Committee, 1.30 p.m.

June 24.—Midland Association—Meeting in Birmingham, 2.30 p.m. Address by Dr. J. G. King, Director of the Gas Research Board.

## 1943 "Journal" Directory

Page 14. BURGESS HILL. F. J. Smith (Kidderminster), *E. & M.*, *vice* W. Norris.

**The 80th Annual General Meeting** of The Institution of Gas Engineers will be held in London on Wednesday next, at 10 a.m. The Presidential Address of Mr. E. V. Evans, O.B.E., F.I.C., will be followed by a general meeting of contributors to the Benevolent Fund of the Institution. At 10.45 a.m. there will be presentation and discussion of short Papers on "The Gas Industry: Considerations on Further Development." After an interval for the President's luncheon, discussion of Papers will occupy the afternoon session.

# SERVICE TO THE CONSUMER*

By E. V. EVANS, O.B.E.,

President of The Institution of Gas Engineers

DURING the past twelve months it has been my privilege to be invited to meetings of most of the District Gas Associations and this has been a most inspiring experience. Everywhere I have found a recognition of the need to expand our Industry, not for the purpose of directly benefiting shareholders or local authorities, but in order that we may contribute as much as possible to the Britain of the future. I have no doubt that the same feelings exist in South Wales as throughout England and Scotland.

In his book *Conditions of Peace* Prof. E. H. Carr, of the University College, Aberystwyth, considers that one of the major failings of our industrialized society is that the producer is inclined to think of his own interests first, and to exercise far too great an influence on the furtherance of his interests. He points out that industry exists for the benefit of the consumer, and that it is the consumer's needs that should be placed first. This point of view is not novel to the Gas Industry, and in formulating our plans for after-war development, we shall put the interests of the public first. The Industry may be assured that if the organization and development of the Gas Industry is planned to make the greatest contribution to the public good, the reward of shareholders and local authorities will follow as a natural consequence.

Our responsibilities to the public consist of those which affect the public as a whole—that is to say, our responsibility to the community, and those which affect the individual.

Our responsibilities to the community arise from the fact that we process large quantities of the nation's most valuable material asset, coal; that we make use of part of the community's accumulated wealth in the form of capital investment; and that we find employment for skilled and unskilled members of the community. Our responsibility lies in becoming assured that all we receive in the form of raw material, monetary investments or labour is used wisely, yielding the fullest benefit to those from whom these resources are obtained.

I do not propose to speak at length on the subject of coal conservation, because I have quoted elsewhere figures which show that the Gas Industry, with its cooking load, saves about one ton of coal for every ton of coal it treats. This achievement of making one ton of coal do the work of two may fairly be considered to rank with the proverbial maxim of making two blades of grass grow where one grew before.

Now a statement of the quantity of coal saved does not do full justice to the contribution made by the Gas Industry to the wise use of coal. The carbonization of coal and the use of gas and coke in place of the raw coal is the only method of using coal which has made any substantial contribution towards the abolition of smoke and the reduction of atmospheric pollution by sulphur. The desirability of ending pollution of the atmosphere has long been recognized, and there have been advocates of compulsory prohibition of smoke. The answer to these advocates has been that you cannot prohibit an existing practice unless you provide a simple and inexpensive alternative. The Gas Industry provides the alternative, and we must see to it that the service we provide is adequate, simple, and inexpensive, and that the public and those who represent the public understand what our service means.

Figures for the saving of coal also ignore the value of the benzole, tar, and ammonia which we make available to the community for so many purposes. Descriptions of the wide range of chemical products made from coal tar are always attractive, and I am often tempted to choose some of these interesting romances for District Gas Associations. But it must be remembered that the greatest contribution made by our products is through their use for more prosaic purposes, though not on that account any less valuable.

As employers of labour, the Gas Industry has good reason to be proud of its record. The provision of continuous employment which incorporates the principles of co-partnership and the establishment of superannuation, provident, and welfare schemes ahead of current practice is one for which credit may be taken. It may be said that the Gas Industry has shown an enlightened understanding of the problem of affording satisfactory employment as a part of its obligations to the community.

Having dealt in a cursory manner with our contribution to the public as a whole, we now turn to the responsibility of our Industry towards the individual consumer. The technical aspects of the use of fuel is not a subject that is understood by the majority of people, and we must not expect the public to take any keen interest in these matters even though the practical effect on their pockets and comfort may be considerable. It has always been recognized as one of the duties of a gas undertaking to act as adviser to the individual consumer, who is, in fact, usually represented by the housewife, and to ensure that appliances suitable to the purpose required are provided. In general this service has been given with a full regard to the interest of the consumer, recognizing that this was the surest way to develop sound business for the undertaking.

While a great deal of experience has been acquired in the likes and dislikes of consumers, there is still much room for improvement in the more complete understanding of domestic fuel needs. The difficulty is largely this: The public are very patient and will put up with inconvenience and deficiencies in the equipment of their homes, because they do not know that better service is obtainable, or for one reason or another are unable to avail themselves of better service. Poor service and unnecessary work in homes fitted with antiquated coal-burning appliances is patiently endured without complaint, and superficially it may seem that the consumer is obtaining satisfaction. Now it is the responsibility of the Gas Industry to know in far greater detail than the consumer what is wrong and what gas and gas appliances are capable of doing to improve matters. It is also the business of the Gas Industry to influence the designers of the homes of the future so that adequate facilities are provided.

We must get behind the consumers' minds and understand the needs and preferences which are often not described in words. May I take a specific example to illustrate the point? For years some people have said that they don't like gas fires, giving as their reason that they dry the air, or scorch, or just that they don't like them. Now, it isn't any use at all trying to explain to a lady who says that the gas fires dry the air that a bowl of water in front of the fire is quite unnecessary, because it can be demonstrated scientifically that the air is no more dried by a gas fire than by any other form of heating. The lady in question will still be quite certain that the scientist is wrong, and that the gas fire does not give the kind of comfort she wants. Our task is to try to discover what the public mean by comfortable heating of their homes, and then find ways and means of providing it.

There is no doubt that many gas fires which have been designed for short-period occasional use, excellent as they are for this purpose, do not give satisfaction when used for continuous heating. The particular features that have been developed in these fires are rapid heating up, so that they come into operation quickly, and a high output of radiant heat, intended to produce a sensation of relative comfort in a room which may not have been heated at all for many hours or even for days. When such a fire is used in the living room of a house the relatively narrow beam of radiant heat is apt to scorch the legs of anyone sitting in front of the fire, and the concentration of an intensely radiating surface into a small area fails to give a sensation of comfortable warmth. It seems obvious that the fire designed for occasional use is unsuitable for constant use.

Now this particular problem has received a good deal of study, and fires have been designed to be entirely without these defects to which the housewife takes exception. The line of argument followed in this developmental work is interesting. Ideally, one should conduct a prolonged series of experiments in which physicists, physiologists, and psychologists should determine the perfect combination of radiant and convected heat distribution at varying intensities over the human body to give the maximum sensation of comfort. I believe that we shall need to make extensive investigations of this nature, but it will be years before results are sufficiently complete for practical use to be made of them. Meanwhile, we have a very useful guide as to the type of heating which most people consider comfortable. An open coal fire burning in a stool grate within the usual type of tiled surround would be generally accepted as typifying a desirable, even though not perfect, type of heat output.

I do not think that in designing our post-war gas fire either the occasional gas fire or the open coal fire—so beloved of the Briton—will be accepted as embodying the principles of comfortable heating. Space heating in the future is more likely to be effected by a combination of the radiant heat gas fire supplemented by background convected heating from flueless gas heaters. Later I shall make reference to this matter, but before doing so I would say that if the public are so wedded to the nature and quality of heat emitted from an open coal fire, it is certainly not beyond the ingenuity of gas technicians faithfully to reproduce these characteristics in a gas fire.

Will you allow me to digress for a moment to deal with the nature of this problem? To reproduce the conditions of a coal fire it would be necessary not only to have the same geometric distribution—that is to say, the quantity of heat emitted in each direction would have to be the same—but the quality of the heat must also be the same.

Upon the question of the quality of the heat, you will be aware that radiant heat is similar to light in that it is energy manifested in the form of electro-magnetic vibrations. Just as the white light of the sun can be split up by a glass prism into a spectrum composed of light of various colours, each colour corresponding to a certain wavelength vibration, so also can radiant heat be analyzed into its constituents of various wavelengths. To do this we use a rock-salt or fluorite prism instead of a glass prism, and measure the intensity of the radiant energy with a thermopile instead of directly with our eyes, but in

* Address to the Wales and Monmouthshire Association of Gas Engineers and Managers, May 27.

principle the method of measurement is the same. Having resolved white light into its constituent colours, we can then combine these colours in suitable proportions to give us any blend that we may desire. In providing a suitable quality of radiant heat from a gas fire we have first ascertained the particular blend of wavelengths emitted by a coal fire and then reproduced a precisely similar blend.

It is most fortunate for us that when firebrick is heated in a gas fire to the same temperature as coal in a coal fire, the blend of wavelengths of radiant heat emitted is, to all intents and purposes, the same.

The problem of design of a gas fire providing similar comfort to a coal fire then resolves itself into providing the same geometric distribution of the radiant heat. When we endeavour to do this we find that a coal fire throws more of its heat upwards towards the ceiling than is the case with the ordinary type of gas fire. It also throws a bigger proportion of the heat sideways and less directly in front of the fire. The radiant heat from the coal fire shines not from a single intense source but from a number of brightly glowing areas, separated by darker patches of unburnt coal.

The wider horizontal geometric distribution of heat is obviously advantageous to people who are sitting in chairs on either side of a fire. The heat thrown upwards to the ceiling appears to play an important part in warming the ceiling and preventing cold downdraughts by air which has been chilled in contact with a cold ceiling. Why the appearance of brightly glowing patches separated by dark patches should be preferable to a continuous bright patch I cannot say—that is a problem for the psychologist to solve—but the fact is certain that a much more restful and pleasing appearance is obtained by breaking up the highly radiating surface.

Now all these characteristics of the coal fire can be reproduced in a gas fire. At the same time the total output of heat can be adjusted to be the same and the quality of heat—that is, the proportion of heat of each wavelength—can also be identical. When this is done we have a gas fire which is totally different from the one that the housewife does not like, and I can assure you, from personal experience, that the comfort of such a fire is in every respect equal to that of a coal fire, with the added advantages of controllability with no work attached. The fire can be designed to appear as a gas fire or may be constructed to imitate the ordinary coal fire. In the former case high efficiency of radiation can be attained, but in the imitation coal fire some degree of efficiency must be sacrificed.

As we are discussing the subject of the heating of the living room from the consumer's point of view, I should like to question the assumption that such a room can be comfortably heated by radiant heat alone. We need to remember that not only occupants of the room and the furniture and the walls require heating, but in really cold weather the air also needs heating. Dr. Margaret Fishenden showed some years ago that if the air temperature is raised above the temperature of the walls, this produces a feeling of stuffiness. But if the air is too cold and we rely upon radiant heat alone there is apt to be a sensation of scorching on one side and freezing on the other. To some extent the heating of the air is effected by contact with heated walls and furniture, and indeed, through the heat generated by the occupants of the rooms, but for many years a substantial amount of air heating has been done by candles, oil lamps, or later gas burners used primarily for lighting the room. When, in place of these, the room is lit by electricity, the effect of air heating is missed; not so much in moderate weather, but in really cold weather the absence of air heating can be very pronounced.

The obvious, and by far the cheapest and most efficient way of providing this air heating is by continuing to burn in the room a quantity of gas approximately the same as that which was formerly used for lighting. But if this method of providing air heating is to be acceptable, there must be no smell from the products of combustion.

The great advantage of providing some air heating by the combustion of a small quantity of the gas in the air of a room is too important for this method to be allowed to become unpopular through the presence of sulphur, which we can to-day well remove from the gas.

Now if this sense of responsibility for meeting the needs of the individual consumer means anything, it means that we must first understand those needs as fully as possible and then put upon ourselves the obligation to meet them. I believe that this will mean that we have to set ourselves very definite standards in the way in which we carry out our work and make certain that we maintain those standards. It is fashionable at the moment to talk of "codes of practice" and it is the establishment and observance of such codes that will be necessary.

Codes of practice are drawn up by observing and measuring existing practice in the relevant trade, thus defining its present level of good practice, and then requiring that all who undertake to do similar work should comply with the code. In the case of our Industry it will be necessary to specify codes of practice for gas manufacturer to ensure the conservation of coal and the production of gas at the lowest practicable cost. The maintenance of gas quality and of adequate pressure of supply are also important technical considerations. What will be more difficult will be to draw up a code of commercial practice, defining such matter as methods of charge and supply, the maintenance of appliances, and consumer service generally.

Our expansion and development, however, will depend upon the way we meet the requirements of the public. Publicity and persuasion may play their part, but we shall be judged upon the amount of comfort we can bring into the home at a reasonable price, and by the facilities we can afford the factory and the commercial establishment.

# Gas Service—Past and Future*

## By A. E. PASK

I would like to relate briefly some of the experiences and tasks which beset me when I took charge of the small undertaking at Caldicot in 1923. Before I do so I would point out that a neighbouring gas engineer had just been appointed to the Board and elected Chairman. I was therefore fortunate in having a chairman who could understand and appreciate the various suggestions and proposals that I later laid before the Board. Further, at the time I relinquished the position in 1938 the control of the Company had been acquired by the Severn Valley Gas Corporation, Ltd., and shortly afterwards gas was supplied in bulk from a neighbouring town.

The Caldicot and District Gas Light and Coke Company, Ltd., experienced hard and difficult times in the last War. Although the Company's accounts were showing a loss each year throughout the war and no dividends had been paid since its formation, it was not until August, 1923, that permission was obtained from the Board of Trade to increase the maximum price of gas from 5s. 6d. to 7s. 6d. per 1,000 cu.ft.

When I took charge in September, 1923, the state of affairs was:

| | £ | s. | d. |
|---|---|---|---|
| Total debit balance on previous years' accounts | 891 | 11 | 8 |
| Owing for coal supplied and other outstanding trading accounts | 2,664 | 0 | 11 |
| Debit balance at bank (which was the guaranteed limit) | 5,000 | 0 | 0 |
| Total | £8,555 | 12 | 7 |
| Total gas sold for the year 1923 | 8,500,000 cu.ft. | | |
| Total receipts from gas residuals, &c., approx. | £4,000 | 0 | 0 |

With gas at 7s. 6d. per 1,000 cu.ft. it was difficult not only to obtain new business, but also to retain existing. To connect new consumers meant extension of mains, and at that time I had to consider carefully and be reasonably certain of a return before committing my Directors to any further outlay. Nevertheless, "nothing ventured, nothing gained," and so in 1924 I started in a small way to extend my mains and connect new consumers. I found the plates of my gasholder had got a disease which no gas engineer can cure. This being my only holder, and having got my Directors as optimistic as myself regarding the future output of gas, they agreed in 1927 to have another holder erected before carrying out repairs to the existing one. The holder, in a steel tank, was erected in 1928. In 1931 No. 1 gasholder was entirely resheeted. The actual gas sold by this time having increased by 47% since 1923 I was glad of the additional storage. I was now able to forecast more clearly my future programme. During the past 9½ years my Company had paid £2,715 in bank charges and interest. My Directors decided to take up £3,600 in debentures and loans. It was with a light step that I walked into the bank with my Chairman to sign the cheque for paying off the overdraft.

Although the accounts had shown a profit since 1923, no dividend on the ordinary shares was paid until the accounts for the year ended June 30, 1935, were considered, when the Directors agreed to pay 2½%; in October, 1935, the first dividend was paid.

By Aug. 31, 1937, apart from paying off outstanding accounts, bank overdraft, and meeting all the heavy expenditure on the items previously mentioned, the debentures and loans were also repaid. When I left Caldicot in June, 1938, to take up my present position, the price of gas had been reduced by 10d. per 1,000 cu.ft.; the number of consumers increased from 336 to 710; the annual sale of gas from 8,500,000 to 15,000,000 cu.ft., or 76.47% increase, and there was a credit balance at the bank.

At least one factor of importance arises from the foregoing. I refer to the lack of any maintenance programme during the last war. I cannot place too much emphasis upon the importance of keeping all works and plant up to standard. We are once again going through another war period, and the difficulty of obtaining materials, the high cost of the materials, as well as the shortage of labour, &c., are all factors that tend to push maintenance of plant somewhat to the background. This is something we must guard against most carefully. Neglect to spend £1 to-day may cost £100 to-morrow.

I had carried out complete gas lighting installations, comprising Suggs "St. Martin's" lamps with switch control, in the four churches within the area. I started a free maintenance scheme for all consumers and made a special feature of supplying the best domestic lighting, cooking, and heating appliances, leaving no stone unturned to obtain the confidence of the consumer, so that when competition came into the district most of the gas consumers stated they were satisfied and had no need to change from the service of gas, including domestic lighting.

This brings me to the present-day attitude regarding domestic gas lighting. While there are a number of gas undertakings who realize the importance of retaining it, there are also a number who have not thought it worth while to retain what is, to my mind, valuable business. We have deliberately courted failure by offering consumers types of burners and fittings which should have been scrapped years ago. Most, if not all, gas showrooms to-day are illuminated with modern and artistic fittings. Unfortunately that is as far as the fittings get. I do not lay the blame at the door of the domestic lighting appliance makers, who have produced efficient modern fittings for lighting, and would produce more if they were given

* From Presidential Address to the Wales and Monmouthshire Association of Gas Engineers and Managers, May 27.

encouragement by the Gas Industry. I appreciate that the better type of fitting has been costly. In my opinion, this is due to the fact that manufacturers are only able to cater for the requirements of show premises.

I beg of the Industry to make domestic lighting one of the post-war planning objects. I sound a warning. It is admitting failure by its present attitude. Murdoch discovered gas to give light. Do not let that light fail.

The future of any industry is directly relative to the ability of the men that industry has gathered to itself. If there is doubt about the future of the Gas Industry, there is doubt as to the ability and vision of the men on whom the Industry relies for its guidance. If our Industry is to attract the younger generation, it must make conditions more attractive than they have been in the past.

The Institution of Gas Engineers is considering an even higher standard of qualification under its education scheme. But, if we are to obtain the best brains and ability—and none but the best will be good enough—then higher salaries must be paid to the chief and to his deputies and technicians. The bulk of the Industry's personnel have been gathered either because they were born into a "gas" family, or because there just "happened" to be a vacancy in the local undertaking when they started out in business life. Rarely, if ever, does one hear of a brilliant man having been attracted to the Industry by the fine prospects it can offer him. We are members of a great Industry. We have a fine history, and we have it in our power to write an even finer future. The world is a market. Under our system of civilization, brains are for sale in that market. They go to the highest bidder. My confidence in the Gas Industry was never stronger. The possibilities are boundless. Let us see that we gather into the Industry youth which will bring honour and glory to its future.

# Associated Gas and Water Undertakings, Ltd.

The Tenth Ordinary General Meeting was held on May 26, at 2, Chart Lane, Reigate, Surrey. The Chairman, Mr. W. H. Bennett, M.Inst.Gas E., said: Before dealing with the accounts I wish to mention the recent retirement of Mr. Lees Stenning from the Board. Mr. Stenning occupied the position of Chairman for three years and had been a Director since the inception of the Company. During that time he gave his colleagues the benefit of his long and valuable business experience in several spheres, including the Gas Industry, of which he has had a lifelong connexion. It was with sincere regret we received the intimation that, acting on medical advice, he had decided to retire. A more loyal, enthusiastic and charming colleague could not be found. Your Directors invited Mr. Thomas Carmichael, M.Inst.C.E., to fill the vacancy on the Board. Mr. Carmichael stands high in the councils of the national organizations of the Gas Industry, is Deputy Chairman and General Manager of the Portsmouth and Gosport Gas Company, and is a Director of other important gas and water undertakings. He comes to us with a very wide experience of the many administrative and engineering problems which confront us to-day, and which we shall have to face in the future.

## Satisfactory Accounts and Dividends

Only a few items in the accounts call for comment. The balance-sheet shows the alteration of capital structure effected by the Special Resolutions passed in October last, when 40% of the issued Ordinary Shares were converted into £388,938 Deferred Stock. Additional Ordinary Capital to the extent of £300,812 has been issued for the acquisition of a majority interest in the Bognor and District Gas and Electricity Company. Investments have increased by £325,851 in consequence of that acquisition and the purchase of further holdings in other of our subsidiaries. In conformity with these Special Resolutions, the sum of £25,000 has been transferred from undivided profit to a "Reserve Fund for the Equalization of Dividends."

With regard to revenue, receipts at £172,714 show an increase of £6,345. Expenditure has risen by £7,855, due to increased taxation, the non-recurring expense of the alteration of the capital structure, and writing £3,584 off the value of investments, compared with £463 during the previous year. After providing for debenture interest and other expenses, the net profit amounts to £60,310, which is sufficient to pay dividends of 5% on the Ordinary Stock and 5½% on the newly created Deferred Capital, and to increase the sum carried forward by £4,349.

Such satisfactory results pay tribute to the excellent service rendered by the officers and staffs of the public utilities under our aegis. Our best thanks are due to them for their devotion to duty and competence in overcoming the many difficulties arising from war conditions.

## Development of Utilities Controlled

Before the outbreak of hostilities it was my practice at our Annual Meetings to deal not only with the figures shown in our own accounts, but to review the activities of our subsidiaries. It is regrettable that this is not permissible during the war, but I believe that, when normal conditions again prevail and the position can be reviewed, stockholders will be more than satisfied with the results achieved by our 29 associated companies.

In the development of this Company we have always had in mind the acquisition of a majority interest in contiguous undertakings, so as to facilitate (where economic and practicable) the closing down of smaller units and the maintenance of the gas supply by interconnection with larger works, coupled with co-ordination of management and technical and commercial supervision. While hostilities have necessarily placed our schemes in abeyance, definite progress has been made during the war, and we are now chiefly operating in two compact areas in Southern England, the Southern Group comprising gas, electricity and water companies in Surrey, Sussex, and Kent, and the Western Group consisting of undertakings in Somerset and Devonshire.

## Post-War Planning

It is interesting to observe that this policy and practice (which we have pursued for the past nine years and intend to extend to the utmost when victory is secured) now appears to be the accepted basis for the post-war planning of the Gas Industry by the Government and the Industry itself. The development of this ideal will be facilitated by the closer co-operation between holding companies which is being brought about by the Association of Gas Corporations, of which your Company is a founder member. The Association is actively engaged in preparing its post-war reconstruction proposals as affecting the 250 gas undertakings which its eleven members control, representing an embarked capital of £25,000,000 and the supply of 41,000 million cu.ft. of gas per annum to 1,400,000 consumers.

## Freedom of Opportunity and Choice

We face the immediate future with complete confidence, despite the fact that our primary objective of increasing the output of our undertakings cannot be fully attained owing to the imperative need for fuel conservation, to secure which we are, as you would expect, co-operating with the Ministry of Fuel and Power in its Fuel Economy Campaigns. The recent establishment of this Ministry has been widely welcomed by the fuel industries as a means of securing the best possible service to the public. We ask only that each industry shall be accorded equal freedom of opportunity and that consumers shall have equal freedom of choice among the fuels available for use.

The Report and Accounts were unanimously adopted.

*Increasing numbers of women are coming across from Canada to release men for active duties. Our photographs show girls of the Canadian Women's Division, R.C.A.F., at their temporary London home, where an "Ascot" heater supplies their hot water requirements.*

# Gas Products Prices

### The London Market May 31.

All Coal Tar Products are in good demand, and Pitch in the London area remains about 45s.

### The Provinces May 31.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Naphtha and Xylol controlled by the Coal Tar, Naphtha, and Xylol Order, 1942, dated Dec. 7, 1942, and operative from Dec. 21. Carbolic acid, 60's, naphthalene, and anthracene controlled by the Coal Tar Products Prices Order S. R. & O. 2509, dated Dec. 7, 1942, and operative from Jan. 1, 1943. Filtered heavy oil (min. gr. 1,080), 7¼d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5½d.; timber preservation and other purposes 4½d. to 6d.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

### Tar Products in Scotland May 29.

Deliveries continue on a satisfactory scale. Refined tar controlled. Value is 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6½d. to 7d.; low gravity, 7¼d. to 7½d.; neutral oil, 6d. to 6½d.; hydrogenation oil, 5¾d. per gallon; all *ex* Works in bulk. Refined cresylic acid is changing hands in fair quantities at 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha: 6½d. to 7d. per gallon. Solvent naphtha: Basic prices delivered in bulk, 90/180 grade 2s. 8d., and 90/190 Heavy Naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 3d. per gallon. Pyridine: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

# TRADE CARDS


**COTTAM & PREEDY LIMITED**

Bishopsgate Street, Birmingham, 15. T/N Midland 5828/9; and at 215-217, Borough High Street, London, S.E. 1. T/N Hop. 3868/9.

Manufacturers of

G.P. BRAND MALLEABLE IRON TUBE FITTINGS, WROUGHT IRON FITTINGS AND MILD STEEL TUBULARS.

**Arkon**

**INSTRUMENTS**

Gas Flow Recorders and Indicators
Pressure and Vacuum Recorders and Indicators
Full Scale or Inclined Gauges

**WALKER, CROSWELLER & CO. LTD.**
CHELTENHAM, GLOS. Cheltenham 5172

**A. G. SUTHERLAND LTD.**

Warwick Road, Greet, Birmingham. T/N Victoria 2184-5. T/A Metriform, Birmingham. London: Riverside Road, S.W. 17. T/N Wimbledon 5454. T/A Insituslot, Toot, London, and at Salford and Nottingham.

GAS METERS

**NATIONAL ENAMELS LTD.**

53, Norman Road, Greenwich, London, S.E.10. T/N Greenwich 2266-7.

Our COOKER LININGS, CROWN TRAYS and SPLASHBACKS have been well proved by the Gas Industry.

**GILLS PRESSURE CASTINGS**

215, Tyburn Road, Birmingham, 24. T/N EASt 1008

Casters in

**"MAZAK" ZINC BASE ALLOYS**

**CHARLES WINN & CO., LTD.**

Granville Street, Birmingham, 1. T/N Midland 3695 (4 lines). T/A Winn, Birmingham.

BACK PRESSURE GAS VALVES, SIZES 1 in. to 12 in. FOR USE WITH AIR BLAST IN INDUSTRIAL AND OTHER GAS-HEATED APPARATUS.

**BIRMINGHAM MANUFACTURERS** write on April 28th, 1943:

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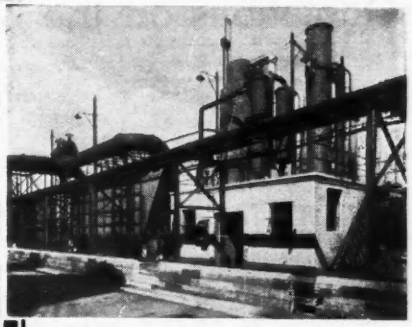
**Every Joint Sound!**



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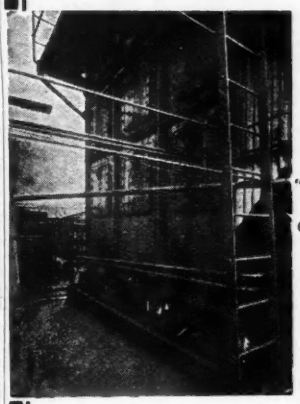

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# GAS STOCKS AND SHARES

The most satisfactory item of Stock Exchange affairs last week was the strength of British Funds, although markets on the whole were quiet and irregular.

There was no marked increase in the volume of business in the Gas Market, but prices continued very firm with a tendency to harden still further. A feature in the Official List was the rise of 5s. in Cape Town 4½% preference to 55s.; in the Supplementary List several preference issues were marked up and in the Sheffield List three Great Grimsby ordinaries closed 5 points higher, business being recorded in the "A" and "B" stocks at 164½. An addition has been made to the Supplementary List by the inclusion of Newport (Mon.) 5% debenture stock.

It is satisfactory to note that of the stocks quoted in the lists below, no less than 56 appreciated in value during May, while none was marked down. Gas Light units gained 1s. 6d. and Commercial has started to improve again, closing 6 points higher on the month. There were also some good improvements in the Supplementary List.

The following price changes occurred during the week:

**OFFICIAL LIST**

| | | |
|---|---|---|
| Associated Gas & Water Undertakings 4½ p.c. Red. Pref. | 19/3—20/3 | +-/3d. |
| Cape Town 4½ p.c. Pref. | 45/—65/- | +5/- |
| Gas Light 3¾ p.c. Red. Pref. | 92—97 | +1 |
| Imperial Continental | 82—86 | +1 |
| Mid-Southern Utility "C" | 95—100 | +3 |
| South Metropolitan Ord. | 79—84 | +2 |
| South Suburban 5 p.c. Pref. | 107—112 | +2 |
| Tottenham 5 p.c. Pref. | 107—112 | +2 |

**SUPPLEMENTARY LIST**

| | | |
|---|---|---|
| Croydon 4 p.c. Pref. | 90—95 | +3 |
| East Surrey 5½ p.c. Pref. "A" | 110—115 | +5 |
| Ditto 6 p.c. Pref. | 120—125 | +5 |
| North Middlesex 5 p.c. Pref. | 105—110 | +2 |

**PROVINCIAL EXCHANGES**

| | | |
|---|---|---|
| Great Grimsby "A" Ord. | 160—170 | +5 |
| " " "B" " | 160—170 | +5 |
| " " "C" " | 150—160 | +5 |

# Quotations on the London and Provincial Stock Exchanges

## OFFICIAL LIST

| Issue. £ | When ex-Dividend. | Dividends. Prev. Hf. Yr. % p.a. | Dividends. Last Hf. Yr. % p.a. | NAME. | Quotations May 27 |
|---|---|---|---|---|---|
| 1,767,439 | Sept. 7 | 5 | 5 | Alliance & Dublin Ord. | 83—88 |
| 374 000 | Dec. 28 | 4 | 4 | Do. 4 p.c. Deb. | 95—100 |
| 583,407 | May 10 | 5 | 5 | Asscd. Gas & Water U'd'ts Ord. | 19/—20/- |
| 388,938 | " | — | — | Do. Deferred | 19/3—20/3 |
| 500.000 | " | 4½ | 4½ | Do. 4½ p.c. Red. Cum. Pref. | 19/3—20/3 |
| 535,545 | " | 4 | 4 | Do. 4 p.c. Red. Cum Pref. | 19/6—20/6 |
| 341,966 | " | 4 | 4 | Do. 4 p.c. Irred. Cum. Pref. | 17/—18/- |
| 561,370 | Feb. 22 | 7 | 7 | Barnet Ord. 7 p.c. | 152—157 |
| 300,000 | Oct. 5 | 1/9⅜ | 1/4⅜ | Bombay, Ltd. | 22/6—23/6 |
| 690,407 | Feb. 15 | 7 | 7 | Bournemouth 7 p.c. max. | 138—143 |
| 362,025 | Dec. 14 | 4 | 4 | Do. 4 p.c. Deb. | 105—110 |
| 659,955 | March 15 | 2½ | 2½ | Brighton, &c., 5 p.c. Con. | 81—86 |
| 855,000 | " | 6 | 6 | Brit. Gas Light Ord. | 103—108 |
| 545,000 | Dec. 21 | 5½ | 5½ | Do. 5½ p.c. 'B' Cum. Pref. | 110—115 |
| 120,000 | " 14 | 4 | 4 | Do. 4 p.c. Red. Deb. | 92—97 |
| 10,000 | Nov. 6 '33 | 6 | 4 | Cape Town, Ltd., 4½ p.c. Cu. Pf. | 45/—65/- |
| 626,860 | Feb. 8 | 6 | 6 | Cardiff Con. Ord. | 102—107 |
| 24,500 | Oct. 26 | 7 | 7 | Colombo 7 p.c. Pref. | 21/—23/- |
| 764,169 | March 22 | -/9.56 | -/9.56 | Colonial Gas Assn. Ltd. Ord. | ⅛—¼ |
| 400,000 | " | 1/3.298 | 1/3.298 | Do 8 p.c. Pref. | ⅛—¼ |
| 1,748,090 | July 22 '40 | 2 | 3 | Commercial Ord. | 63—68 |
| 620,000 | Dec. 7 | 3 | 3 | Do. 3 p.c. Deb. | 60—65 |
| 286,344 | Feb. 15 | 5 | 5 | Do. 5 p.c. Deb. | 105—110 |
| 807,560 | " 22 | 6 | 6 | Croydon sliding scale | 121—126 |
| 644,590 | " | 5 | 5 | Do. max. div. | 100—105 |
| 620,385 | Dec. 28 | 5 | 5 | Do. 5 p.c. Perp. Deb. | 123—128 |
| 179,500 | Feb. 22 | 5 | 5 | East Surrey 'B,' 5 p.c. | 85—90 |
| 176,461 | Dec. 28 | 5 | 5 | Do. 5 p.c. Deb. (Irred.) | 122—127 |
| 250,000 | Nov. 9 | 6 | 4 | Gas Consolidation Ord. 'B' | 16/6—18/6 |
| 250,000 | May 10 | 4 | 4 | Do. 4 p.c. Red. Cum. Pref. | 18/—20/- |
| 19.107,811 | Feb. 15 | — | † | Gas Light & Coke Ord. | 17/6—18/6a |
| 2,600,000 | " | — | †1½ | Do. 3½ p.c. max. | 70—75 |
| 4,477,106 | " | 4 | 4 | Do. 4 p.c. Con. Pref. | 90—95 |
| 2,993,000 | " | 3½ | 3½ | Do. 3½ p.c. Red. Pref. | 92—97 |
| 8,602,497 | Nov 30 | 3 | 3 | Do. 3 p.c. Con. Deb. | 86—89 |
| 3,642,770 | " | 5 | 5 | Do. 5 p.c. Red. Deb. | 106—110 |
| 3,500,000 | " | 4½ | 4½ | Do. 4½ p.c. Red. Deb. | 105—110 |
| 700,000 | March 8 | 3½ | 3½ | Do. 3½ Red. Deb. | 96—99 |
| 5,600,000 | May 13 '40 | 4 | 8 | Imperial Continental Cap. | 82—86 |
| 43,820 | Jan. 25 | 3½ | 3½ | Do. 3½ p.c. Red. Deb. | 95—100 |
| 231,978 | Feb. 22 | 5 | 5 | M.S. Utility 'C' Cons. | 95--100 |
| 918,657 | " | 4 | 4 | 4 p.c. Cons. Pref. | 90—95 |
| 675,000 | May 3 | ‡4 | ‡4 | Montevideo, Ltd. | 95—100 |
| 300,000 | April 27 | 9 | 7 | Oriental, Ltd. | 107—112 |
| 368,537 | June 15 | 3½ | 2½† | Plymouth & Stonehouse 5 p.c. | 80—85 |
| 621,667 | Feb. 8 | 7½ | 7½ | Portsmouth & Gosport Cons. | 118—123 |
| 2,381,363 | May 17 | 4† | 4† | Primitiva Holdings, Ltd. Ord. | 13/—15/- |
| 233,900 | Dec. 14 | 3½ | 3½ | Do. 6½ p.c. Red. Cum. Pref. | 100—105 |
| 648,999 | Sept. 7 | 1/1½ | 1/1½ | Severn Val. Gas Cor. Ld. Ord. | 20/—21/- |
| 597,972 | March 8 | 4½ | 4½ | Do. 4½ p.c. Cum. Pref. | 18/6—20/6 |
| 2,528,714 | Aug. 24 | 1/- | 7½ | South East'n Gas Cn. Ld. Ord. | 18/9—19/9 |
| 1,000,000 | March 1 | -/10½ | -/10½ | Do. 4½ p.c. Red. Cum. Pref. | 18/6—20/6 |
| 1,068,869 | " | 4 | 4 | Do 4 p.c. Irred. Cum. Pref. | 17/—19/- |
| 6,709,895 | Feb. 22 | — | † | South Met. Ord. | 79—84 |
| 1,135,812 | " | — | †6 | Do. 6 p.c. Irred. Pref. | 125—130 |
| 850,000 | " | — | †4 | Do. 4 p.c. Irred. Pref. | 90—95 |
| 1,895,445 | Dec. 28 | 3 | 3 | Do. 3 p.c. Perp. Deb. | 83—88 |
| 1,000,000 | Jan. 11 | 5 | 5 | Do. 5 p.c. Red. Deb. | 103—108 |
| 1,543,795 | Feb. 8 | 4 | 4 | South Suburban Ord. 5 p.c. | 95—100 |
| $12,825 | " | 5 | 5 | Do. 5 p.c. Perp. Pref. | 107—112 |
| $00,000 | " | 4 | 4 | Do. 4 p.c. Perp. Pref. | 88—93 |
| 250,000 | " | 3½ | 3½ | Do. 3½ p.c. Red. Pref. | 90—95 |
| 888,587 | Dec. 14 | 3 | 3 | Do. 5 p.c. Perp. Deb. | 123—128 |
| 750,541 | Feb. 8 | 2 | 6 | Southampton Ord. | 83—88 |
| 350,000 | " 15 | 5½ | 5½ | Swansea 5½ p.c. Red. Pref. | 95—100 |
| 1,076,495 | March 1 | 5 | 5 | Tottenham & District Ord. | 103—108 |
| 338,555 | " | 5 | 5 | Do. 5 p.c. Pref. | 107--112 |
| 453,380 | Dec. 7 | 4 | 4 | Do. 4 p.c. Perp. Deb. | 102—107 |
| 1,247,505 | Nov. 9 | 6 | 4 | U. Kingdom Gas Cor. Ord. | 19/6—20/6 |
| 1,085,952 | May 17 | 4½ | 4½ | Do. 4½ p.c. 1st Cum. Pref. | 19/—21/- |
| 772,709 | " | 4 | 4 | Do. 4 p.c. 1st Red. Cum.Pref. | 19/—21/- |
| 745,263 | Dec. 14 | 4½ | 4½ | Do. 4½ p.c. 2nd Non.Cum. Pf. | 17/—19/- |
| 1,200,000 | March 15 | 3½ | 3½ | Do. 3½ p.c. Red. Deb. | 95—100 |
| 380,606 | Aug. 24 | 6⅜ | 6⅜ | Uxbridge, &c., 5 p.c. | 118—123 |
| 1,371,138 | Jan. 25 | 4 | 6 | Wandsworth Consolidated | 104—109 |
| 2,525,768 | " | 4 | 4 | Do. 4 p.c. Pref. | 91—96 |
| 1,343,964 | Dec. 14 | 5 | 5 | Do. 5 p.c. Deb. | 123—128 |
| 383,745 | " | 4 | 4 | Do. 4 p.c. Deb. | 102—107 |
| 558,342 | Feb. 22 | 5 | 5 | Watford & St. Albans Ord. | 108—113 |
| 300,000 | Dec. 7 | 3½ | 3½ | Do. 3½ p.c. Red. Deb. | 90—95 |

## SUPPLEMENTARY LIST

| Issue. £ | When ex-Dividend. | Dividends. Prev. Hf. Yr. % p.a. | Dividends. Last Hf. Yr. % p.a. | NAME. | Quotations May 27 |
|---|---|---|---|---|---|
| 351,685 | Dec. 14 | 5 | 5 | Brighton, &c., 5 p.c. Perp. Deb. | 122—127 |
| 415,250 | " | 4 | 4 | Bristol Gas Co., 4 p.c. New Deb. | 100—105 |
| 140,205 | Feb. 15 | 7 | 7 | Cambridge, &c., 7 p.c. Cons. 'B' | 135—140 |
| 295,932 | March 8 | 5 | 5 | Cheltenham, 5 p.c. Cons. Ord. | 95—100 |
| 42,500 | Dec. 14 | 4 | 4 | Do. 4 p.c. Perp. Deb. | 103—108 |
| 150,000 | Feb. 22 | 4 | 4 | Croydon Gas, 4 p.c. Pref. (Irr.) | 90—95 |
| 130,000 | Dec. 28 | 4 | 4 | Do. 4 p.c. Deb. | 102—107 |
| 146,700 | Feb. 22 | 5½ | 5½ | East Surrey, 5½ p.c. Pref. 'A' | 110—115 |
| 53,220 | " 9 | 6 | 6 | Do. 6 p.c. Cum. Pref. | 120—125 |
| ... | Aug. 19 '40 | 6 | 4 | Eastbourne, 'B' 3½ p.c. | 43—48 |
| 117,425 | Feb. 5 '40 | 8 | 8 | East Wight Cons. 5 p.c. | 65—70 |
| 239,135 | Nov. 9 | 5 | 5 | Gas Consolidation 'A' Ord. (£1) | 15-/—17/- |
| 156,600 | Feb. 15 | 5 | 5 | Hampton C't, 5 p.c. Cons. Ord. | 95—100 |
| 18,000 | Dec. 29'41 | 3½ | 3½ | Maita & Med'n., 7 p.c. 1st Pref. | 30—40 |
| 10,845 | June 30'41 | 3½ | 3½ | Do. 7½ p.c. 2nd Pref. | 30—40 |
| 50,000 | Feb. 22 | £5 4 6 | £5 4 6 | Mid. South. Util., 'A' Cons. 5 p.c. | 90—95 |
| 70,380 | Dec. 21 | 5 | 5 | Newport (Mon.), 5 p.c. Deb. | 102—107 |
| 65,000 | May 17 | 5 | 5 | North Middlesex, 5 p.c. Pref. | 105—110 |
| 70,000 | March 15 | 5 | 5 | Plymouth & Stone., 5 p.c. Deb | 112—117 |
| 76,501 | Dec. 21 | 4 | 4 | Reading, 4 p.c. Perp. Deb. | 97—102 |
| 74,777 | March 31 | 4 | 4 | Romford, 4 p.c. Debs. (Reg.) | 95—100 |
| 21,000 | Dec. 7 | 5 | 5 | Slough, 5 p.c. Perp. Deb. | 120—125 |
| 211,740 | " 14 | 5 | 5 | Southampton, 5 p.c. Red. Deb. | 103—108 |
| 363,575 | Jan. 4 | 5 | 5 | Tottenham, 5 p.c. Reg. Red. Mt. | 99—102 |
| 202,019 | Aug. 24 | 7½ | 7½ | Tunbridge Wells, 4 p.c. Scale | 118—123 |
| 135,257 | Dec. 7 | 5 | 5 | Uxbridge &c., 5 p.c. Perp. Deb. | 122—127 |

## PROVINCIAL EXCHANGES

| | | | | | Quotations May 20. |
|---|---|---|---|---|---|
| 804,948 | March 1 | 5 | 5 | Bath Cons. | 100—103 |
| 122,577 | " 8 | 5 | 7 | Blyth 5 p.c. Ord. | 108—110 |
| 1,667,250 | Feb. 15 | 5 | 5 | Bristol, 5 p.c. max. | 113—115 |
| 120,420 | Dec. 14 | 4 | 4 | Do. 1st 4 p.c. Deb. | 101½—103½ |
| 415,250 | " | 4 | 4 | Do. 2nd 4 p.c. Deb. | 101½—103½ |
| 328,790 | " | 5 | 5 | Do. 5 p.c. Deb. | 112—117 |
| 157,150 | Feb. 1 | 5 | 6½ | Chester 5 p.c. Ord. | 98—102 |
| 92,500 | Dec. 14 | 4 | 4 | Do. 4 p.c. Pref. | 79—81 |
| 36,430 | " | 3½ | 3½ | Do. 3½ p.c. Deb. | 78—82 |
| 41,890 | " | 4 | 4 | Do. 4 p.c. Red. Deb. | 98—100 |
| 542,270 | Feb. 8 | 6 | 9 | Derby Cons. | 122—127 |
| 55,000 | Dec. 14 | 4 | 4 | Do. 4 p.c. Deb. | 95—100 |
| 10,000 | Feb. 22 | 10 | 10 | Great Grimsby 'A' Ord. | 160—170 |
| 6,500 | " | 10 | 10 | Do. 'B' Ord. | 160—170 |
| 79,000 | " | 10 | 10 | Do. 'C' Ord. | 150—160 |
| 732,000 | Feb. 15 | 4 | 4 | Hartlepool G. & W. Cn. & New | 83—85 |
| 2,167,410 | " 22 | 5 | 5 | Liverpool 5 p.c. Ord. | 105½—106½ |
| 245,500 | Dec. 21 | 5 | 5 | Do. 5 p.c. Red. Pref. | 100—104 |
| 306,083 | Jan. 18 | 4 | 4 | Do. 4 p.c. Deb. | 100—102 |
| 20,000 | Dec. 21 | 5 | 5 | Long Eaton 5 p.c. Pref. | 9—11 |
| 80,000 | " | 5 | 5 | Do. 5 p.c. Deb. | 100—105 |
| 2,430,267 | Feb. 8 | 5½ | 5½ | Newcastle and Gateshead Con. | 23/3—23/9o |
| 682,856 | " | 4 | 4 | Do. 4 p.c. Pref. | 97½—98½ |
| 776,706 | Dec. 28 | 3½ | 3½ | Do. 3½ p.c. Deb. | 96½—97½ |
| 277,285 | April 27 | 5 | 5 | Do. 5 p.c. Deb. '43 | 99—101 |
| 13,200 | Sept. 16 | 8½ | 7 | Pontyp'l Gas & W. 10 p.c. 'A' | 11½—12½ |
| 13,600 | " | 6 | 5 | Do. 7 p.c. 'B' | 9½—10½ |
| 40,000 | " | 5 | 6 | Do. 7 p.c. 'C' | 9½—10½ |
| 106,280 | Feb. 8 | 10 | 10 | Preston 'A' 10 p.c. | 167—169 |
| 188,219 | " | 7 | 7 | Do. 'B' 7 p.c. | 124—129 |
| 1,806,339 | " 22 | 6½ | 6½ | Sheffield Cons. | 129—132 |
| 95,000 | Jan. 4 | 4 | 4 | Do. 4 p.c. Deb. | 98—100 |
| 332,351 | Feb. 22 | 6 | 6 | Sunderland 6 p.c. max. | 114—116 |
| 192,150 | " 8 | 5 | 5 | Weston-super-Mare Cons. | 99—101 |
| 64,338 | Jan. 4 | 4 | 4 | Do. 4 p.c. Deb. | 99—101 |
| 33,340 | " | 7½ | 7½ | Do. 7½ p.c. Deb. | 142—147 |

o—The quotation is per £1 of Stock. • Ex. div † For year. ‡ Paid free of income-tax.